



# FACT SHEET

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|--------------------------------|--|
| NPDES Permit Number:           | ID-002040-1  |
| Public Notice Start Date:      | April 27, 2001   |
| Public Notice Expiration Date: | May 29, 2001   |
| Technical Contact:             | Kelly Huynh 206/553-8414<br>1-800-424-4372 (within Region 10)<br>huynh.kelly@epa.gov |

**The United States Environmental Protection Agency (EPA)  
Plans To Reissue A  
National Pollutant Discharge Elimination System (NPDES) Permit To:**

**The City of St. Anthony  
110 West Main Street  
St. Anthony, Idaho 83445**

**the Idaho Department of Environmental Quality Proposes to  
Certify the Permit**

**EPA Proposes NPDES Permit Reissuance.**

EPA proposes to reissue an NPDES permit to the City of St. Anthony. The draft permit places conditions on the discharge of pollutants from the wastewater treatment plant to a drainage ditch and then the Henry's Fork River. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged.

This Fact Sheet includes:

- information on public comment, public hearing, and appeal procedures
- a description of the current discharge
- a listing of proposed effluent limitations and other conditions
- a map and description of the discharge location
- detailed technical material supporting the conditions in the permit

**The State of Idaho Proposes Certification.**

EPA is requesting that the Idaho Department of Environmental Quality certify the NPDES permit for the City of St. Anthony, under section 401 of the Clean Water Act.

**Public Comment.**

Persons wishing to comment on the draft permit may do so in writing by the expiration date of the public notice. All comments must be in writing and include the commenter's name, address, and telephone number and either be addressed to the Office of Water Director at U.S. EPA, Region 10, 1200 6th Avenue, OW-130, Seattle, WA 98101; submitted by facsimile to (206) 553-0165; or submitted via e-mail to [huynh.kelly@epa.gov](mailto:huynh.kelly@epa.gov).

After the comment period closes, and all significant comments have been considered, EPA's regional Director for the Office of Water will make a final decision regarding permit reissuance. If no comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon reissuance. If comments are received, EPA will address the significant comments and reissue the permit. The permit will become effective 30 days after the issuance date, unless an appeal is filed with the Environmental Appeals Board within 30 days.

**Public comment on State certification**

Persons wishing to comment on State Certification should submit written comments by the Public Notice expiration date to the Idaho Department of Environmental Quality (IDEQ), c/o Greg Eager, 900 North Skyline, Suite B, Idaho Falls, Idaho 83402. A copy of the comments should also be submitted to EPA.

**Documents are Available for Review.**

The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday (See address below). Draft permits, Fact Sheets, and other information can also be found by visiting the Region 10 website at [www.epa.gov/r10earth/water.htm](http://www.epa.gov/r10earth/water.htm).

United States Environmental Protection Agency  
Region 10  
1200 Sixth Avenue, OW-130  
Seattle, Washington 98101  
(206) 553-2108 or  
1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The Fact Sheet and draft permit are also available at:

EPA Idaho Operations Office  
1435 North Orchard Street  
Boise, Idaho 83706  
(208) 378-5746

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## **I. APPLICANT**

City of St. Anthony  
NPDES Permit No.: ID-002040-1

110 West Main Street  
St. Anthony, Idaho 83445

Contact: Woody Anderson, Public Works Department

## **II. FACILITY INFORMATION**

### **A. Treatment Plant Description**

The City of St. Anthony owns, operates, and has maintenance responsibility for a facility which treats domestic sewage from the local residents of St. Anthony and Parker and commercial establishments. The facility's application indicates that the design flow of the facility is 1.0 million gallons per day (mgd). From 1994 through 2000 the facility's average monthly discharge has been between 0.09 mgd and 0.54 mgd. Domestic wastewater is treated through a three-cell facultative aerated lagoon system. Effluent is chlorinated prior to discharge and is discharged year-round to a drainage ditch, which flows into the Henry's Fork River and joins with the Teton River about 10.5 miles west of the plant. Domestic sludge has accumulated in the bottom of the lagoons and removal has not been required to date.

### **B. Background Information**

The current NPDES permit was issued on September 24, 1987 and expired on September 23, 1992. Under federal law, specifically, the Administrative Procedures Act (APA), a federally issued NPDES permit is administratively extended (i.e., continues in force and effect) provided that the permit holder submits a timely and complete application for a new permit prior to the expiration of the current permit. The City submitted an application (Standard Form A) that was received by EPA on July 31, 1992, therefore, the current permit was administratively extended. The City of St. Anthony subsequently filed a General Form 1 and NPDES Form 2A that was received by EPA on July 31, 2000. This updated application was in response to a request by EPA dated June 6, 2000.

A review of the facility's Discharge Monitoring Reports<sup>1</sup> for the past five years indicates that the facility has periodically failed to be in compliance with its permit effluent limits for five-day biochemical oxygen demand (BOD<sub>5</sub>), total suspended solids (TSS) and fecal coliform.

A map has been included in Appendix A which shows the location of the treatment plant and the discharge location.

### III. RECEIVING WATER

#### A. Outfall Location/ Receiving Water

The treated effluent from the City of St. Anthony wastewater treatment facility is discharged from Outfall 001, located at latitude 43° 57' 06" and longitude 111° 42' 52", to a drainage ditch and then the Henry's Fork River just past River Mile 31.

Monitoring data was not available to determine the low flow (i.e., 1Q10<sup>2</sup> or the 7Q10<sup>3</sup> flows) conditions in the drainage ditch. However, flow information was available for the Henry's Fork River at USGS Gage Station 13050500 (just north of St. Anthony) at River Mile 29.5. The 1Q10 and 7Q10 for the Henry's Fork River at this location are 461 cubic feet per second (cfs) and 517 cfs, respectively. Therefore, these flows will be used to determine if water quality based effluent limitations are required for this discharge.

#### B. Water Quality Standards

A State's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy. The use classification system designates the beneficial uses (such as cold water aquatic life communities, contact recreation, etc.) that each water body is expected to achieve. The numeric and/or narrative water quality criteria are the criteria deemed necessary, by the State, to support the beneficial use classification of each water body. The anti-degradation policy represents a three tiered approach to maintain and protect various levels of water quality and uses.

The Idaho *Water Quality Standards and Wastewater Treatment Requirements* (IDAPA 58.01.02.101.02) protect the drainage ditch (i.e. a man-made waterway) for the use in which it was developed; agricultural water supply and general

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<sup>1</sup> Discharge monitoring reports are forms that the facility uses to report the results of monitoring the facility has done in compliance with their NPDES permit.

<sup>2</sup> The 1Q10 represents the lowest daily flow that is expected to occur once in ten years.

<sup>3</sup> The 7Q10 represents the lowest 7-day flow that is expected to occur in ten years.

surface water quality. The state standards (IDAPA 58.01.02.140.16) protect the Henry's Fork River for cold water aquatic life communities, salmonid spawning, primary and secondary contact recreation, domestic water supply, and special resource waters. Because the flow in the drainage ditch is not available, the downstream uses of the Henry's Fork River must be protected for.

The criteria that the State of Idaho has deemed necessary to protect the beneficial uses for the drainage ditch and Henry's Fork River, and the State's anti-degradation policy are summarized in Appendix B.

#### **IV. EFFLUENT LIMITATIONS**

In general, the Clean Water Act requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. A technology-based effluent limit requires a minimum level of treatment for municipal point sources based on currently available treatment technologies. A water quality-based effluent limit is designed to ensure that the water quality standards of a waterbody are being met. For more information on deriving technology-based effluent limits and water quality-based effluent limits see Appendices C and E. The following summarizes the proposed effluent limitations that are in the draft permit.

1. The pH range shall be between 6.5 - 9.0 standard units.
2. Removal Requirements for BOD<sub>5</sub>: For any month, the monthly average effluent BOD<sub>5</sub> load shall not exceed 35 percent of the monthly average influent BOD<sub>5</sub>.
3. Surface waters shall be free of floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses.
4. Surface waters of the state shall be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses.
5. Table 1, below, presents the proposed effluent limits for BOD<sub>5</sub> and TSS which are continued from the existing permit. New limits for fecal coliform, E. coli bacteria and total residual chlorine have been included in the permit.

| <b>Table 1: City of St. Anthony Effluent Limitations</b> |                              |                             |                            |  |
|--|------------------------------|-----------------------------|----------------------------|--|
| <b>Parameters</b>  | <b>Average Monthly Limit</b> | <b>Average Weekly Limit</b> | <b>Maximum Daily Limit</b> | <b>Instantaneous Maximum Daily Limit</b> |
| BOD <sub>5</sub>   | 45 mg/L<br>375 lbs/day       | 65 mg/L<br>542 lbs/day      | ---                        | ---                                      |
| TSS  | 70 mg/L<br>584 lbs/day       | 105 mg/L<br>876 lbs/day     | ---                        | ---                                      |
| Fecal coliform, organisms/100 mL                         | ---                          | 200                         | ---                        | ---                                      |
| E. coli bacteria, organisms/100 mL                       | 126                          | ---                         | ---                        | 406                                      |
| Total Residual Chlorine                                  | 0.5 mg/L<br>4.2 lbs/day      | ---                         | 0.9 mg/L<br>7.5 lbs/day    | ---                                      |

## **V. SLUDGE REQUIREMENTS**

The biosolids management regulations at 40 CFR §503 were designed so that the standards are directly enforceable against most users or disposers of biosolids, whether or not they obtain an NPDES permit. Therefore, the publication of Part 503 in the *Federal Register* on February 19, 1993 served as notice to the regulated community of its duty to comply with the requirements of the rule, except those requirements that indicate that the permitting authority shall specify what has to be done.

Requirements are included in Part 503 for pollutants in biosolids, the reduction of pathogens in biosolids, the reduction of the characteristics in biosolids that attract vectors, the quality of the exit gas from a biosolids incinerator stack, the quality of biosolids that are placed in a municipal solid waste landfill unit, the sites where biosolids are either land applied or placed for final disposal, and for a biosolids incinerator.

Even though Part 503 is self-implementing, Section 405(f) of the CWA requires the inclusion of biosolids use or disposal requirements in any NPDES permit issued to a Treatment Works Treating Domestic Sewage. In addition, the biosolids permitting regulations in 40 CFR §122 and §124 have been revised to expand its authority to issue NPDES permits with these requirements. This includes all biosolids generators, biosolids treaters and blenders, surface disposal sites and biosolids incinerators. In the future, EPA Region 10 will be issuing a separate NPDES general permit which deals only with the use and disposal of biosolids. Facilities that generate biosolids, including the City of St.

Anthony, will be required to be covered under the biosolids general permit. As mentioned earlier, even though the permit holder does not presently have a permit for biosolids use or disposal, the Permit holder is responsible for complying with the requirements of 40 CFR 503.

Presently, the permit holder accumulates biosolids in the sewage lagoons. The draft permit requires the permit holder to comply with 40 CFR Part 503 in the event that any biosolids are removed from the sewage lagoons.

## VI. MONITORING REQUIREMENTS

### A. Effluent Monitoring

Section 308 of the Clean Water Act and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality. The Permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports to EPA. Table 2 presents the proposed effluent monitoring requirements.

| <b>TABLE 2: City of St. Anthony Monitoring Requirements</b> |                        |                         |                    |
|---|------------------------|-------------------------|--------------------|
| <b>Parameter</b>  | <b>Sample Location</b> | <b>Sample Frequency</b> | <b>Sample Type</b> |
| Flow, mgd   | Influent               | Continuous              | Recording          |
| BOD <sub>5</sub> , mg/L                                     | Influent and Effluent  | 1/month                 | grab               |
| TSS, mg/L   | Effluent               | 1/month                 | grab               |
| pH, standard units  | Effluent               | 1/week                  | grab               |
| Fecal coliform Bacteria, organisms/100 mL                   | Effluent               | 5/week                  | grab               |
| E. coli Bacteria, organisms/100 mL                          | Effluent               | 5/month                 | grab               |
| Temperature, °C   | Effluent               | 1/week                  | grab               |
| Total Ammonia as N, µg/L                                    | Effluent               | 1/quarter               | grab               |
| Total Residual Chlorine, mg/L                               | Effluent               | 1/week                  | grab               |



B. Upstream and Downstream Ambient Monitoring

The permittee shall monitor flow upstream of outfall 001 in the drainage ditch. The permittee shall also monitor temperature, pH, and total ammonia in the Henry's Fork River (downstream of where the drainage ditch enters). The ambient monitoring shall be on a quarterly basis for the duration of this permit.

C. Representative Sampling

The draft permit has expanded the requirement in the federal regulations regarding monitoring (40 CFR 122.41[j]). This provision now specifically requires representative sampling whenever a bypass, spill, or non-routine discharge of pollutants occurs, if the discharge may reasonably be expected to cause or contribute to a violation of an effluent limit under the permit. This provision is included in the draft permit because routine monitoring could easily miss permit violations and/or water quality standards exceedences that could result from bypasses, spills, or non-routine discharges. This requirement directs the permittee to conduct additional, targeted monitoring to quantify the effects of these occurrences on the final effluent discharge.

## **VII. OTHER PERMIT CONDITIONS**

A. Quality Assurance Plan

The federal regulation at 40 CFR 122.41(e) requires the Permit holder to develop and submit a Quality Assurance Plan to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The Permit holder is required to complete a Quality Assurance Plan within **60 days** of the effective date of the final permit and implement it within **120 days** of the effective date of the permit. The Quality Assurance Plan shall consist of standard operating procedures the Permit holder must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting.

B. Additional Permit Provisions

Sections II, III, and IV of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because they are regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and other general requirements.

C. Operation and Maintenance Plan

Section 402 of the Clean Water Act and federal regulations 40 CFR 122.44(k)(2) and (3) authorize EPA to require best management practices, or BMPs, in NPDES permits. BMPs are measures for controlling the generation of pollutants and their release to waterways. For municipal facilities, these measures are typically included in the facility's Operation & Maintenance (O&M) plan. These measures are important tools for waste minimization and pollution prevention.

The draft permit requires the City of St. Anthony to incorporate appropriate BMPs into their O&M plan within **180 days** of permit issuance. Specifically, the City must consider spill prevention and control, optimization of chemical use, public education aimed at controlling the introduction of household hazardous materials to the sewer system, and water conservation. To the extent that any of these issues have already been addressed, the City need only reference the appropriate document in its O&M plan. The O&M plan must be revised as new practices are developed.

## VIII. OTHER LEGAL REQUIREMENTS

A. Endangered Species Act

The Endangered Species Act requires federal agencies to consult with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) if their actions could adversely affect any threatened or endangered species. EPA has contacted both services regarding threatened and endangered species in the Teton River watershed. NMFS has indicated that there are no listed or threatened species at the location of St. Anthony's discharge. The USFWS has indicated that none of the endangered species in the area are expected to be impacted by reissuance of the NPDES permit. Therefore, EPA has determined that issuance of this permit will have **no effect** on any of the endangered species that may occur in the vicinity of the discharge. See Appendix D for further details.

B. Essential Fish Habitat

Section 305(b) of the Magnuson-Stevens Act (16 USC 1855(b)) requires federal agencies to consult with the NMFS when any activity proposed to be permitted, funded, or undertaken by a federal agency may have an adverse effect on designated Essential Fish Habitat (EFH) as defined by the Act. The EFH regulations define an *adverse effect* as any impact which reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site-specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

To date, federal management plans have been approved by the Secretary of

Commerce for groundfish and coastal pelagics. None of the 83 West Coast groundfish surveyed for the federal management plan included habitat near the Henry's Fork River (see Section III for a description of the discharge location). Similarly, the coastal pelagic species are not effected by the permitted discharges. Appendix A of Amendment 14 to the Pacific Coast Salmon Plan includes a geographic range for freshwater EFH for coho, chinook, and pink salmon (Figure A-1) that does not include Henry's Fork River. Because the permit does not include discharges to EFH, EPA has made a finding of **no potential for adverse effect**.

C. State Certification

Section 401 of the Clean Water Act requires EPA to seek state certification before issuing a final permit. As a result of the certification, the state may require more stringent permit conditions or additional monitoring requirements to ensure that the permit complies with water quality standards.

D. Permit Expiration

This permit will expire five years from the effective date of the permit.

APPENDIX A  
Wastewater Treatment Plant Location

The wastewater treatment plant location map has been provided as a separate file due to its size of the file (593 KB). The file is titled “ID0020401 FS App A.pdf.”

## APPENDIX B Water Quality Standards

### A. Water Quality Criteria

For the City of St. Anthony's discharge, the following water quality criteria are necessary for the protection of the beneficial uses of the drainage ditch and the downstream uses of the Henry's Fork River:

1. IDAPA 58.01.02.200.02 - Surface waters of the State shall be free from toxic substances in concentrations that impair designated beneficial uses. Furthermore, IDAPA 58.01.02.210.01 incorporates the National Toxics Rule by reference as found in 40 CFR 131.36(b)(1) that includes numeric criteria for toxic substances.
2. IDAPA 58.01.02.200.05 - Surface waters of the State shall be free from floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses.
3. IDAPA 58.01.02.200.06 - Surface waters of the State shall be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses.
4. IDAPA 58.01.02.250.01.a. - Hydrogen ion concentration (pH) values shall be within the range of 6.5 to 9.5 standard units.
5. IDAPA 58.01.02.250.01.c.i. - The one-hour average concentration of total residual chlorine shall not exceed 19 ug/L.
6. IDAPA 58.01.02.250.01.c.ii. - The four-day average concentration of total residual chlorine shall not exceed 11 ug/L.
7. IDAPA 58.01.02.250.02.a. - Dissolved oxygen concentrations shall exceed 6 mg/L at all times.
8. IDAPA 58.01.02.250.02.c.i - The one hour average concentration of un-ionized ammonia (as N) is not to exceed  $(0.43/A/B/2)$  mg/L, where:

A = 1 if the water temperature (T) is  $\leq 20^{\circ}\text{C}$ , or  
 $A = 10^{(0.03(20-T))}$  if  $T < 20^{\circ}\text{C}$ , and

B = 1 if the pH is  $\leq 8.0$ , or  
 $B = (1 + 10^{(7.4-\text{pH})}) \div 1.25$  if pH is  $< 8.0$

9. IDAPA 58.01.02.250.02.c.ii - The four day average concentration of un-ionized ammonia (as N) is not to exceed  $(0.66/A/B/C)$  mg/L, where:

$A = 1.4$  if  $T$  is  $\leq 15^{\circ}\text{C}$ , or

$A = 10^{(0.03(20-T))}$  if  $T < 15^{\circ}\text{C}$ , and

$B = 1$  if the pH is  $\leq 8.0$ , or

$B = (1 + 10^{(7.4-\text{pH})}) \div 1.25$  if pH is  $< 8.0$

$C = 13.5$  if pH is  $\leq 7.7$ , or

$C = 20(10^{(7.7-\text{pH})}) \div (1 + 10^{(7.4-\text{pH})})$  if the pH is  $< 7.7$

10. IDAPA 58.01.02.250.02.e - Waters designated for salmonid spawning are to exhibit the following characteristics during the spawning period and incubation for the particular species inhabiting those waters:
- IDAPA 58.01.02.250.02.e.i - Intergravel dissolved oxygen shall have a one day minimum of not less than 5.0 mg/L and a seven day average mean of not less than 6.0 mg/L.
  - IDAPA 58.01.02.250.02.e.ii - Water column dissolved oxygen shall have a one day minimum of not less than 6.0 mg/L or 90% saturation, whichever is greater; and water temperatures of 13 degrees C or less with a maximum daily average no greater than 9 degrees C.
11. IDAPA 58.01.02.251.01 Waters designated for primary contact recreation are not to contain E. coli bacteria significant to the public health in concentrations exceeding:
- 406/100 mL at any time,
  - a geometric mean of 126/100 mL based on a minimum of five samples taken every 3 to 5 days over a thirty day period.

## B. Anti-Degradation Policy

The State of Idaho has adopted an anti-degradation policy as part of their water quality standards. The anti-degradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses. The three tiers of protection are as follows:

**Tier 1 – Maintenance of Existing Uses for all Waters** - The existing instream uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

**Tier 2 – High Quality Water** – Where the quality of the water exceeds levels necessary to support propagation of fish, shellfish and wildlife and recreation in and on the water, that

quality shall be maintained and protected unless the Department finds, after full satisfaction on the intergovernmental coordination and public participation provisions of the Department's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the Department shall assure water quality adequate to protect existing uses fully.

**Tier 3 - Outstanding Resource Waters** – Where high quality waters constitute an outstanding natural resource, such as waters of national and state parks and wildlife refuges, and waters of exceptional recreational or ecological significance, that water shall be maintained and protected from the impacts of point and nonpoint source activities.

The Henry's Fork River is a Tier 2 waterbody; therefore, IDEQ must conduct an anti-degradation analysis that allows the discharge to continue and assures the highest statutory and regulatory requirements.

## APPENDIX C

### Basis for Effluent Limitations

The Clean Water Act (CWA or the “Act”) requires Publicly Owned Treatment Works to meet performance-based requirements (also known as technology-based effluent limits) based on available wastewater treatment technology. EPA may find, by analyzing the effect of an effluent discharge on the receiving water, that technology-based effluent limits are not sufficiently stringent to meet water quality standards. In such cases, EPA is required to develop more stringent, water quality-based effluent limits designed to ensure that water quality standards are met. The draft effluent limits reflect whichever limits (technology-based or water quality-based) are more stringent. The following explains in more detail the derivation of technology-based effluent limits and water quality-based effluent limits.

#### A. Technology-based Effluent Limitations

On September 20, 1984, EPA revised the Secondary Treatment Regulations (40 CFR 133.102) for facilities that use trickling filters or waste stabilization ponds as the principal process. These revisions established effluent limitations for Treatment Equivalent to Secondary Treatment (40 CFR 133.105). Furthermore, the State of Idaho has adjusted the suspended solids effluent limitations for waste stabilization ponds in accordance with 40 CFR 133.103(c) (IDAPA 58.01.01.420.02.b.ii). The resulting minimum discharge requirements for waste stabilization ponds in Idaho are summarized in the table below:

| <u>Parameter</u>                        | <u>Monthly<br/>Average</u> | <u>Weekly<br/>Average</u> | <u>Percent<br/>Removal</u> |
|---|----------------------------|---------------------------|----------------------------|
| Biochemical Oxygen Demand (5-day), mg/L | 45                         | 65                        | 65                         |
| Suspended Solids, mg/L                  | 70                         | 105*                      |                            |

\*Although the state does not specify (in IDAPA58.01.02.420.02.b.ii) a weekly average effluent limitation for suspended solids in its standards, the one in the draft permit has been retained from the existing permit in accordance with 40 CFR 122.45(d)(2).

EPA methodology and Federal regulations at (40 CFR § 122.45 (b) and 122.45 (f)) require BOD<sub>5</sub> and TSS limitations to be expressed as mass based limits using the design flow (1.0 mgd) of the facility. The loading is calculated as follows: concentration X design flow X 8.34. Using this formula, the plant’s BOD<sub>5</sub> and TSS discharge permit limits are :

|   |             |
|---|-------------|
| BOD loading, monthly average = 45 mg/L X 1.0 mgd X 8.34 = | 375 lbs/day |
| BOD loading, weekly average = 65 mg/L X 1.0 mgd X 8.34 =  | 542 lbs/day |
| TSS loading, monthly average = 70 mg/L X 1.0 mgd X 8.34 = | 584 lbs/day |
| TSS loading, weekly average = 105 mg/L X 1.0 mgd X 8.34 = | 876 lbs/day |



The federal regulations at 40 CFR 133.105(c) require that the effluent values for pH be between 6.0 and 9.0 s.u. for facilities discharging effluent equivalent to secondary (i.e. waste stabilization lagoons).

The technology-based chlorine effluent limitation of 0.5 mg/L is derived from standard operating practices. The Water Pollution Control Federation's Chlorination of Wastewater (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/L chlorine residual is maintained after 15 minutes of contact time. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/L limit on a monthly average basis. Additionally, NPDES regulations require effluent limits for POTWs to be expressed as average weekly limits (AWLs) as well as average monthly limits (AMLs) unless impracticable. The AWL is expressed as 1.5 times the AML, or in this case 0.75 mg/L. Finally, federal regulations require limitations to be expressed as mass-based limits using the design flow of the facility.

Idaho's water quality standards found at IDAPA 16.01.02.420.05 include the technology-based limit that fecal coliform concentrations in secondary treated effluent not exceed a geometric mean of two hundred per one hundred ml based on no more than one week's data and a minimum of five samples.

## B. Water Quality-based Evaluation

### 1. Statutory Basis for Water Quality-based Limits

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards by July 1, 1977. Discharges to state waters must also comply with limitations imposed by the state as part of its certification of NPDES permits under section 401 of the CWA.

The NPDES regulation (40 CFR 122.44(d)(1)) implementing section 301 (b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which "are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality."

The regulations require that this evaluation be made using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation.

## 2. Reasonable Potential Determination

When evaluating the effluent to determine if water quality-based effluent limits are needed based on chemical specific numeric criteria, a projection of the receiving water concentration (downstream of where the effluent enters the receiving water) for each pollutant of concern is made. The chemical specific concentration of the effluent and ambient water and, if appropriate, the dilution available from the ambient water are factors used to project the receiving water concentration. If the projected concentration of the receiving water exceeds the numeric criterion for a specific chemical, then there is a reasonable potential that the discharge may cause or contribute to an excursion above the applicable water quality standard, and a water quality-based effluent limit is required.

As mentioned above, sometimes it is appropriate to allow a small area of ambient water to provide dilution of the effluent. These areas are called mixing zones. Mixing zone allowances will increase the mass loading of the pollutant to the water body, and decrease treatment requirements. Mixing zones can be used only when there is adequate ambient flow volume and the ambient water is below the criteria necessary to protect designated uses.

## 3. Procedure for Deriving Water Quality-based Effluent Limits

The first step in developing a water quality-based permit limit is to develop a wasteload allocation for the pollutant. A wasteload allocation is the concentration (or loading) of a pollutant that the Permit holder may discharge without causing or contributing to an exceedance of water quality standards in the receiving water. Wasteload allocations are determined in one of the following ways:

### (a) TMDL-based Wasteload Allocation

Where the receiving water quality does not meet water quality standards, the wasteload allocation is generally based on a TMDL developed by the State. A TMDL is a determination of the amount of a pollutant from point, non-point, and natural background sources, including a margin of safety, that may be discharged to a water body without causing the water body to exceed the criterion for that pollutant. Any loading above this capacity risks violating water quality standards.

Section 303(d) of the CWA requires states to develop TMDLs for water bodies that will not meet water quality standards after the imposition of technology-based effluent limitations to ensure that these waters will come into compliance with water quality standards. The first step in establishing a TMDL is to determine the assimilative capacity (the loading of pollutant that a water body can assimilate without exceeding water quality standards). The next step is to divide the assimilative capacity into

allocations for non-point sources (load allocations), point sources (wasteload allocations), natural background loadings, and a margin of safety to account for any uncertainties. Permit limitations are then developed for point sources that are consistent with the wasteload allocation for the point source. A TMDL is not necessary for the Henry's Fork River where St. Anthony discharges.

(b) Mixing Zone-based WLA

When the State authorizes a mixing zone for the discharge, the WLA is calculated by using a simple mass balance equation. The equation takes into account the available dilution provided by the mixing zone and the background concentrations of the pollutant. A mixing zone was considered when developing total residual chlorine water quality-based limits and found to be less restrictive than the technology-based limits. Therefore, the technology-based limits have been included in the draft permit.

(c) Criterion as the Wasteload Allocation:

In some cases a mixing zone cannot be authorized, either because the receiving water already exceeds the criteria or the receiving water flow is too low to provide dilution. In such cases, the criterion becomes the wasteload allocation. Establishing the criterion as the wasteload allocation ensures that the Permit holder will not contribute to an exceedance of the criteria.

Once the wasteload allocation has been developed, the EPA usually applies the statistical permit limit derivation approach described in Chapter 5 of the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001, March 1991, hereafter referred to as the TSD) to obtain monthly average, and weekly average or daily maximum permit limits. This approach takes into account effluent variability, sampling frequency, and water quality standards. The lower pH range was determined using the criterion as the minimum limit.

C. Basis for Effluent Limits

1. Toxic Substances

The Idaho water quality standards require surface waters of the state to be free from toxic substances in concentration that impair designated uses. The City of St. Anthony's discharge is not expected to contain toxic substances because it does not receive industrial process wastewater for treatment. The Permittee was not required to submit expanded effluent testing data or toxicity testing data because the facilities design flow is less than or equal to 1.0 mgd.

2. Narrative criteria

The Idaho water quality standards require surface waters of the state to be free from floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses. In addition, the water quality standards require that surface waters be free from excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses. The draft permit has incorporated these narrative criteria.

3. E. coli and Fecal Coliform Bacteria

The bacteria E. coli (*Escherichia coli*) is commonly found in publically owned treatment work effluent. Therefore, consistent with state water quality standards for the protection of primary contact (i.e. swimming), an E. coli effluent limit has been added to the permit. The Idaho water quality standard for wastewater discharges (IDAPA 58.01.02.420.5) require the technology-based requirement that fecal coliform concentrations not exceed a geometric mean of 200/100 ml based on a minimum of five samples in one week.

4. Total Residual Chlorine

The previous fact sheet for this facility (July 1987) included an effluent limits of 2.0 mg/L for chlorine. A reasonable potential analysis was conducted on the monitoring data and water quality-based effluent limitations were determined to be needed. Because the average monthly technology-based limit is more stringent than the water quality-based limit it has been applied as well as a maximum daily limit. See Appendix E for more details .

5. pH

The Idaho state water quality standards require surface waters of the state to have a pH value within the range of 6.5 - 9.5 standard units. The technology-based regulations require that pH be within the range of 6.0 - 9.0 s.u. Therefore, a minimum water quality-based value of 6.5 s.u. and a maximum technology-based limit of 9.0 s.u. has been included in the permit.

6. Biochemical Oxygen Demand and Total Suspended Solids

The BOD<sub>5</sub> and TSS effluent limits and removal requirements were included in the draft permit consistent with the technology-based requirements for facilities treating equivalent to secondary wastewater. Water quality criteria are not available for these parameters. Discharges from the City of St. Anthony are not expected to have an appreciable effect on the dissolved oxygen concentration in the Henry's Fork River because of the BOD limitations in the draft permit.

7. Ammonia

IDEQ has developed water quality criteria to protect aquatic life against short term and long term adverse impacts from ammonia using the equations found in IDAPA 58.01.02.250.02.c.i (1-hour average) and IDAPA 58.01.02.250.02.c.ii (4-day average). Since effluent ammonia data are not available, a reasonable potential analysis for ammonia could not be completed. The draft permit includes requirements for effluent and ambient monitoring of ammonia in the drainage ditch and the Henry's Fork River.

## APPENDIX D

### Endangered Species Act

Section 7 of the Endangered Species Act (ESA) requires federal agencies to request a consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) regarding potential effects an action may have on listed endangered species.

On August 18, 2000, NMFS sent an e-mail to EPA Region 10 indicating that there are no listed or threatened species at the location of the St. Anthony discharge. In a letter dated September 1, 2000, the U.S. Fish and Wildlife Service identified the Canada lynx, gray wolf, grizzly bear, bald eagle, whooping crane, and Ute ladies' - tresses (a plant found in wet meadows and river meanders) as being federally-listed endangered species occurring in Fremont County, Idaho (the location of the St. Anthony discharge). This list has not changed according to the updated species list (1-4-01-SP-362) dated March 1, 2001.

EPA has determined that the requirements contained in the draft permit will not have an impact on the Canada lynx, gray wolf, grizzly bear, bald eagle, whooping crane, or Ute ladies' - tresses. Hunting and habitat destruction are the primary causes of declines of the Canada lynx, the gray wolf and the grizzly bear. Issuance of the draft NPDES permit to the City of St. Anthony will not result in habitat destruction, nor will it result in changes in population that could result in increased habitat destruction. Furthermore, issuance of this draft permit will not impact the food sources of the Canada lynx, the gray wolf, or the grizzly bear.

The primary reasons for the decline of the bald eagle are destruction of their habitat and food sources and widespread historic application of DDT. This permit will not impact any of these issues.

The whooping crane and gray wolf are included on the list as an experimental and non-essential population in the area. Habitat management plans are not developed for these populations.

Modification of riparian and wetland habitats associated with livestock grazing, vegetation removal, excavation, construction, stream channelization, and actions that alter hydrology are the primary causes for adverse impacts to Ute ladies' - tresses. Issuance of an NPDES permit for the City of St. Anthony wastewater treatment plant will not result in habitat destruction. Data is unavailable regarding whether or not the Ute ladies' - tresses are found in the vicinity of the discharge.

Informal consultation on September 21, 2000 and September 29, 2000 with the USFWS indicated that reissuance of the permits would not affect the Canada lynx, gray wolf, grizzly bear, whooping crane, bald eagle, or Ute ladies' - tresses. Therefore, EPA has determined that issuance of this permit will **not affect** any of the endangered species that may occur in the vicinity of the discharge.

APPENDIX E  
Derivation of Water Quality Based  
Effluent Limitations for  
Total Residual Chlorine

This appendix describes how the water quality-based effluent limits were calculated for total residual chlorine. The calculations were performed according to procedures outlined in Chapter 5 of EPA's *Technical Support Document for Water Quality-Based Toxics Control*, EPA/505/2-90-001, March 1991. Because flow is not known in the drainage ditch, it is assumed to be an extension of outfall 001 and the downstream uses of the Henry's Fork River are protected for.

In calculating water quality-based limits, EPA used the following assumptions:

1Q10 = 461 cfs (based on USGS data)

7Q10 = 517 cfs (based on USGS data)

Mixing zone = 25% of the Henry's Fork River

**Step 1 - Determine the appropriate water quality criteria**

The water quality criteria is determined based on the use of the receiving water. The Henry's Fork River is protected for cold water aquatic life communities, salmonid spawning, primary and secondary contact recreation, domestic water supply, and special resource waters. Idaho standard (IDAPA 58.01.02250.01.c) require that the chlorine discharged be protective of aquatic life. The acute criteria is **19 µg/L** as N and chronic criteria is **11 µg/L**.

**Step 2 - Determine whether there is "reasonable potential" to exceed the criteria**

There is reasonable potential (RP) to exceed water quality criteria if the maximum projected concentration of the pollutant at the edge of the mixing zone exceeds the criterion. The maximum projected concentration is calculated using the following mass-based equation:

$$C_d = \frac{(C_e \times Q_e) + (C_u \times (Q_u \times \%MZ))}{Q_e + (Q_u \times MZ)}$$

Where,

$Q_e$  = design flow (1.55 cfs)

$Q_u$  = upstream receiving water low flow (461 cfs for acute and 517 cfs for chronic)

$C_d$  = receiving water concentration downstream of the effluent discharge

$C_e$  = maximum projected effluent concentration (2880 µg/L)

= maximum reported effluent concentration (2400 µg/L) X reasonable potential multiplier (1.2)

In calculating the reasonable potential multiplier, EPA used a coefficient of

variation of 0.504 based on monthly data reported between December 1994 through January 2000.

$C_u$  = upstream concentration of pollutant (0 mg/L)

$C_{d-Acute} = 38.2 \mu\text{g/L} > \text{acute criteria of } 19 \mu\text{g/L}$

$C_{d-Chronic} = 34.1 \mu\text{g/L} > \text{chronic criteria of } 11 \mu\text{g/L}$

Because the downstream concentrations are greater than the criteria, total residual chlorine limits must be included in the permit.

### Step 3 - Calculate Wasteload Allocations

Acute and chronic waste load allocations ( $WLA_{acute}$  or  $WLA_{chronic}$ ) are calculated using the same mass balance equation used to calculate the concentration of the pollutant at the edge of the mixing zone. However,  $C_d$  becomes the criterion and  $C_e$  is replaced by the  $WLA_{acute}$  or  $WLA_{chronic}$ . The WLAs define the appropriate concentration of pollutant allowed in the effluent.

$$WLA = \frac{C_d(Q_u \times \%MZ) + (C_d Q_e) - Q_u C_u (\%MZ)}{Q_e}$$

$$WLA_{acute} = 1431 \mu\text{g/L}$$

$$WLA_{chronic} = 928 \mu\text{g/L}$$

### Step 4 - Develop Permit Limits

#### a) Convert the WLAs to Long Term Averages (LTAs)

The acute and chronic WLAs are converted to acute and chronic LTA concentrations ( $LTA_{acute}$  and  $LTA_{chronic}$ ) using the following equations from Section 5.4 of EPA's TSD:

$$LTA_{acute} = WLA_{acute} \times e^{[0.5F^2 - zF]} \text{ where,}$$

CV = coefficient of variation of the effluent concentration, standard deviation/mean = 0.504

$$F^2 = \ln(CV^2 + 1) = 0.226$$

z = 2.326 for 99<sup>th</sup> percentile probability basis

$$LTA_{acute} = 530 \mu\text{g/L}$$

$$LTA_{chronic} = WLA_{chronic} \times e^{[0.5F^2 - zF]} \text{ where,}$$

CV = coefficient of variation of the effluent concentration = 0.504

$$F^2 = \ln(CV^2/4 + 1) = 0.062$$



$$z = 2.326 \text{ for } 99^{\text{th}} \text{ percentile probability basis}$$

$$LTA_{\text{chronic}} = 536 \mu\text{g/L}$$

### b) Calculate Average Monthly and Maximum Daily Permit Limits

To protect a water body from both acute and chronic effects, the more limiting of the calculated  $LTA_{\text{acute}}$  and  $LTA_{\text{chronic}}$  is used to derive the effluent limitations. The TSD recommends using the 95<sup>th</sup> percentile for the Average Monthly Limit (AML) and the 99<sup>th</sup> percentile for the Maximum Daily Limit (MDL).

To derive the MDL and the AML for chlorine the calculations would be as follows:

$$MDL = LTA_{\text{acute}} \times e^{(zF - 0.5F^2)} \text{ where,}$$

$$CV = \text{coefficient of variation} = 0.504$$

$$F^2 = \ln(CV^2 + 1) = 0.226$$

$$z = 2.326 \text{ for } 99^{\text{th}} \text{ percentile probability basis}$$

$$MDL = 1400 \mu\text{g/L}$$

$$AML = LTA_{\text{acute}} \times e^{(zF - 0.5F^2)} \text{ where,}$$

$$CV = \text{coefficient of variation} = 0.504$$

$$F^2 = \ln(CV^2/n + 1) = 0.062$$

$$z = 1.645 \text{ for } 95^{\text{th}} \text{ percentile probability basis}$$

$$n = \text{number of sampling events required per month} = 4$$

$$AML = 770 \mu\text{g/L}$$

Because the **average monthly** technology-based chlorine effluent limitation of **0.5 mg/L** is more stringent than the water quality-based limit it has been included. Federal regulations require permit limits to be expressed as average monthly and average weekly limits, unless impracticable. Region 10 considers it impracticable to incorporate weekly limits into the permit because federal regulations do not prohibit a Permittee from increasing their sampling events above what is required in an NPDES permit. This is significant because a Permittee may collect as many samples as necessary during a week to bring the average of the data set below the average weekly effluent limit. In such cases, spikes of a pollutant could be masked by the increased sampling. While this is not a concern with pollutants that are not toxic, such as total suspended solids or phosphorus, it is a significant concern when toxic pollutants, such as chlorine or ammonia, are being discharged. Using a maximum daily limit instead of an average weekly limit will ensure that spikes do not occur, and will be protective of aquatic life. For these reasons EPA, Region 10 considers it impracticable to develop an average weekly limit for chlorine, and instead will incorporate a maximum daily limit.

The maximum daily limit is derived by multiplying the monthly limit by 1.84 according to Section 5.4.4 of the TSD. Therefore, the **maximum daily limit** is 1.84(.5 mg/L) or **0.9 mg/L**.

Mass based concentration limits were calculated by multiplying the concentration limit by the design flow (1.0 mgd) and the 8.34 conversion factor.

$$\text{MDL} = (1.0 \text{ mgd}) \times (8.34) \times (0.9 \text{ mg/L}) = \mathbf{7.5 \text{ lbs/day}}$$

$$\text{AML} = (1.0 \text{ mgd}) \times (8.34) \times (0.5 \text{ mg/L}) = \mathbf{4.2 \text{ lbs/day}}$$